REMARKS/ARGUMENTS

Claims 9-16 are pending herein. Independent claims 9 and 16 have been amended to clarify that the single vibration source comprises a single vibration transmission surface, the entirety of which is flat, as supported by claim 13 and Fig. 2(a), for example. Applicants respectfully submit that no new matter has been added.

1. The drawings were objected to in sections 3 and 4 of the Office Action. Applicants respectfully traverse these objections.

In section 3 of the Office Action, Examiner Kim asserted that the base frame 13c shown in new formal drawing Fig. 3, submitted with the Amendment and RCE on February 13, 2004, is not supported by the original disclosure. Applicants disagree.

That is, Applicants respectfully submit that paragraph [0029] of the substitute specification filed on August 26, 2003, clearly recites that the vibration source 13 is separately formed and fixed partially on a base frame, the lower surface of which is the movable section of the vibration source 13. This base frame language is also supported on page 14, lines 6-10 of the original specification, as well.

In view of the above, Applicants respectfully submit that the original disclosure does, in fact, provide direct support the base frame 13c shown in Fig. 3. Accordingly, Applicants respectfully request that the above drawing objection be reconsidered and withdrawn.

In section 4 of the Office Action, Examiner Kim asserted that the feature recited in claim 11 that the vibration source is fixed to a fixation section and at least another portion of the vibration source is in contact with the liquid sump is not shown in the drawings.

Applicants respectfully submit, however, that Fig. 3 clearly shows that the vibration source 13b is fixed to a fixation section (base frame 13c), which is supported by the original specification, as mentioned above. Further, in connection with Figs. 3 and 4, paragraphs [0030]-[0031] of the substitute specification clearly explain that the lower surface of the vibration source 13 is lowered with respect to the base frame on

which it is mounted, causing the passage 20 (of the liquid sump) to deform. As the lower surface of the vibration source rises upwardly to return to the original position, the passage 20 also returns to its original shape. This is also supported in the original specification on page 14, line 18--page 15, line 4.

In view of the above, Applicants respectfully submit that one of ordinary skill in the art would readily understand that the vibration source is fixed to a fixation section and that at least another portion of the vibration source contacts the liquid sump, as recited in claim 11, based on Figs. 3 and 4, when read in conjunction with paragraphs [0028]-[0031] of the substitute specification.

For at least the foregoing reasons, Applicants respectfully request that the above drawing objection be reconsidered and withdrawn.

2. The specification was objected to in sections 5 and 6 of the Office Action. Applicants respectfully traverse these objections.

Examiner Kim objected to the amended substitute specification paragraph filed in the February 13, 2004 Amendment, and asserted that amended paragraph [0029] is not supported by the original disclosure. Applicants respectfully submit that Examiner Kim is incorrect.

That is, with respect to the description of Fig. 3, the phrase "(i.e., a fixation section)" was added to paragraph [0029] merely as a clarifying alternative language description of the base frame to which the vibration source is partially fixed. Applicants respectfully submit that an amended description of a previously disclosed element using consistent, interchangeable terms does not constitute new matter. With respect to the added term "(i.e., flat)," Applicants respectfully submit that this clarifying term was likewise added merely as an alternative language description for the "smooth" vibration transmission surface that is clearly shown in the original drawings. In fact, MPEP §2163.07 Part I clearly states that "[M]ere rephrasing of a passage does not constitute new matter. Accordingly, a rewording of a passage where

the same meaning remains intact is permissible. *In re Anderson*, 471 F.2d 1237, 176 USPQ 331 (CCPA 1973)."

In view of the above, Applicants respectfully request that the above specification objection be reconsidered and withdrawn.

Examiner Kim also asserted that the term "fixation section" recited in claim 11 lacks proper antecedent basis. Applicants disagree. The remarks of the Amendment filed February 13, 2004 explain that support for the term "fixation section" in claim 11 is clearly found in original claim 3 and in the original specification in paragraph [0011], for example. That is, the term "fixation member" in claim 11 was merely replaced with the original term "fixation section" for the reasons explained previously in the February 13, 2004 Amendment. Further, as mentioned above, merely rephrasing a term, and in this case, merely replacing a term with a previously deleted term having the same meaning, does not constitute new matter.

For at least the foregoing reasons, Applicants respectfully request that the above specification objection be reconsidered and withdrawn.

3. Claim 13 was rejected under §112, first paragraph. In section 8 of the Office Action, Examiner Kim asserted that the original disclosure does not support the term "flat." The portion of claim 13 relating to the term "flat" has been deleted in favor of rewritten claim 9. Accordingly, Applicants respectfully traverse this rejection with respect to claim 9, as well.

Referring to Fig. 2(a), for example, Applicants respectfully submit that the vibration source 13b clearly comprises a single vibration transmission surface, the entirety of which is flat, whereby vibrations generated by the vibration source are transmitted via the flat vibration transmission surface to the outwardly projecting thin walled portions 10a of the pressure chambers 10. In that manner, Applicants respectfully submit that support for the claim limitation that the vibration source comprises a single vibration transmission surface, the entirety of which is "flat," in

fact, found in the original drawings. Further, both original Fig. 3 and new Fig. 3 also clearly show that the thin walled portions 10a are, in fact, "flat," for example.

Applicants direct Examiner Kim's attention to MPEP §2163, Part II A3(a), paragraph 3, which recites "an applicant may show possession of an invention by disclosure of drawings or structural chemical formulas that are sufficiently detailed to show that applicant was in possession of the claimed invention as a whole. See, e.g., Vas-Cath, 935 F.2d at 1565, 19 USPQ2d at 1118 (**"drawings alone may provide a 'written description' of an invention as required by Sec. 112\"**)."

Since the drawings clearly provide proper support for the term "flat" as it is recited in both the specification and rewritten claim 9, Applicants respectfully submit that this rejection is improper. Accordingly, Applicants respectfully request that the above rejection be reconsidered and withdrawn.

4. Claims 9, 10 and 15 were rejected under §102(b) over Yao in section 9 of the Office Action. Applicants respectfully traverse this rejection.

Independent claim 9 recites, among other things, a liquid-drop spraying device including a liquid sump comprising a plurality of pressure chambers. Each pressure chamber includes an outlet and an inlet in communication with a common fluid supply passage via an inlet passage. The liquid-drop spraying device also includes a single vibration source for changing the volume of at least two pressure chambers of the liquid sump.

In addition, independent claim 9 now also recites that the vibration source comprises a single vibration transmission surface, the entirety of which is flat, which was originally recited in claim 13. Since claim 13 was not rejected over Yao, however, Applicants respectfully submit that rewritten claim 9, and all claims depending therefrom, define patentable subject matter over Yao for this reason alone. However, Applicants respectfully submit that independent claim 9 defines patentable subject matter over Yao even without considering the features of claim 13 that are now recited in claim 9.

That is, Examiner Kim asserted that Yao discloses a liquid-drop spraying device comprising "a liquid sump 20 including an outlet 22 and inlet 19; a common fluid supply passage 11; a vibration source 16" (Office Action, page 4, lines 7-9). In the Response to Arguments section (section 11) of the Office Action, however, Examiner Kim asserted that "each pressure chamber comprising of a tube 20 and portions of chamber 11 in vertical alignment with each tube 20. They each have and [sic., an] inlet (defined by the passage of fluid into those areas) and an outlet 22 in communication with the common fluid supply passage via an inlet passage 15" (Office Action, page 5, lines 2-5).

Referring to Yao's Fig. 1, however, Applicants respectfully submit that Examiner Kim's own remarks actually contradict his stated position. That is, Examiner Kim asserted that Yao discloses a common fluid supply passage 11, but then asserted that the common fluid supply passage is instead another unillustrated portion that is connected to the chamber 11 via the intake passage 15. Additionally, Applicants respectfully submit that if each "pressure chamber" of Yao comprises a tube 20 defined by the inlet 19 and outlet 22, as Examiner Kim asserted in the rejection, then it is clear that portions of the closed reservoir 11 below the inlet 19 (in vertical alignment with each tube 20) are necessarily *not* portions of the "pressure chambers" (nozzles) 20, since the nozzles 20 are defined by the area *between* the inlet 19 and outlet 22.

In view of the foregoing, Applicants respectfully submit that Yao does not disclose each and every element recited in independent claim 9, even without considering the new features now recited in rewritten claim 9.

Further, Examiner Kim asserted that "the claims do not limit a 'plurality of pressure chambers' in any way" (Office Action, page 5, line 9). Applicants respectfully submit that this assertion is incorrect.

That is, independent claim 9 clearly limits the structure of the plurality of pressure chambers in that claim 9 specifically recites that each pressure chamber includes an outlet and an inlet in communication with a common fluid supply passage

via an inlet passage. Applicants respectfully request Examiner Kim to clarify what relationship, if any, he was attempting to establish between his assertion regarding this claim language and the art rejection over Yao.

Even in view of Examiner Kim's unclear assertion, however, Applicants respectfully submit that all claims pending herein define patentable subject matter over Yao for the reasons explained above. Accordingly, Applicants respectfully request that the above rejection be reconsidered and withdrawn.

5. Claims 9-14 and 16 were rejected under §102(b) over Perduijn in section 10 of the Office Action. Applicants respectfully traverse this rejection.

Independent claim 9 is discussed above in section 4.

In the Response to Arguments section of the Office Action, Examiner Kim asserted that "Perduijn discloses a single vibration source 7 (see figure 5) which changes the volume of multiple pressure chambers 3" (Office Action, page 5, lines 18-19). Applicants respectfully submit, however, that there is no disclosure in Perduijn of a single vibration source comprising a single vibration transmission surface, *the entirety of which is flat*, that changes the volume of at least two of the pressure chambers of the liquid sump, as claim 9 now recites.

That is, referring to Fig. 5 of Perduijn, on which Examiner Kim relied, Applicants respectfully submit that Perduijn's tubular pumping member 7, which consists of parts of the two piezoelectric plates 23 and 25, surrounds each of the "liquid sumps" 3 via an adhesive 5 and, in some cases, via the internal electrode 11 (i.e., metal layers 37, 41). Applicants respectfully submit that if Perduijn's pumping section 7 is taken to be the vibration source, as Examiner Kim asserted, then it is clear that the vibration transmission surface radially surrounds the tube 3, and that it is <u>not</u> a <u>single</u> vibration transmission surface, since it includes portions of both plates 23 and 25. Further, the <u>entirety</u> of these vibration transmission surfaces is <u>not</u> flat, as recited in claim 9.

Dependent claim 13 recites that vibrations generated by the vibration source are transmitted via the vibration transmission surface to an outwardly projecting thin walled portion of at least one of the pressure chambers to reduce the volume of the pressure chamber. If, however, Perduijn's tube 3 is taken to be the "liquid sump," as Examiner Kim asserted, it is clear that each tube 3 merely comprises a single pressure chamber, not a plurality of pressure chambers, as recited in claim 9. If the arrangement of a plurality of Perduijn's tubes 3 is instead taken to be a plurality of pressure chambers, however, Applicants respectfully submit that there is still no disclosure that any of Perduijn's tubes 3 have an outwardly projecting thin walled portion, since each of the tubes 3 is merely cylindrical (with circular wall portions in cross-section). That is, Applicants respectfully submit that none of Perduijn's tubes 3 include any thin walled portions that project outwardly from the cylindrical tube wall.

For the reasons explained above, Applicants respectfully submit that there is no disclosure in Perduijn of a single vibration source having a single vibration transmission surface, the entirety of which is flat, as recited in claim 9, whereby vibrations are transmitted to an outwardly projecting thin walled portion of at least one pressure chamber via the vibration transmission surface to reduce the volume of the pressure chamber, as recited in claim 13. In view of the foregoing, Applicants respectfully submit that independent claim 9, and all claims depending therefrom, thus define patentable subject matter over Perduijn.

Independent claim 16 recites, in part, a liquid-drop spraying device that is formed by a method comprising the steps of providing a liquid sump comprising a plurality of pressure chambers, providing a single vibration source comprising a single vibration transmission surface, the entirety of which is flat, for changing the volume of at least two of the pressure chambers of the liquid sump, and integrating the liquid sump and the vibration source.

Applicants respectfully submit, however, that independent claim 16 defines patentable subject matter over Perduijn since Perduijn does not disclose each and

every structural feature recited in claim 16 for the same reasons explained above in connection with the like structural features of independent claim 9.

For at least the foregoing reasons, Applicants respectfully submit that all claims pending herein define patentable subject matter over Perduijn. Accordingly, Applicants respectfully request that the above rejection be reconsidered and withdrawn.

Applicants respectfully request that Examiner Kim telephone Applicants' representative in advance of taking any further action on this application other than issuing a Notice of Allowance.

If Examiner Kim believes that contact with Applicants' attorney would otherwise be advantageous toward the disposition of this case, he is herein requested to call Applicants' attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

Respectfully submitted,

August 5, 2004
Date

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